

of alcohol with respect to polyvinyl alcohol of 1.0 to 3.0, while distilling off the carboxylic ester produced by the saponification reaction, wherein said saponification comprises:

a first stage saponification process, comprised in turn of a primary saponification reaction, in which a saponification reaction is carried out in a kneader mixer by mixing the polyvinyl ester in the alcohol-containing organic solvent under the presence of a saponification catalyst and

a subsequent secondary saponification reaction, in which a saponification reaction is carried out in a tower reactor while distilling off the carboxylic ester that is produced; and

a subsequent second stage saponification process, comprised in turn of a primary saponification reaction, in which a saponification reaction is carried out in a kneader mixer by mixing the polyvinyl ester in the alcohol-containing organic solvent under the presence of a saponification catalyst and

a subsequent secondary saponification reaction, in which a saponification reaction is carried out in a shell and tube evaporator while distilling off the carboxylic ester that is produced,

wherein the degree of saponification attained in said secondary saponification reaction of the second stage is 99.6 mole% or more and the concentration of the polyvinyl alcohol polymer in the saponification reaction solution is 10 wt% or more.

DISCUSSION OF THE AMENDMENT

Claims 29, 31-40, 43-45, 47-50, 52-54 and 59 have been canceled.

Claim 55 has been amended to correct a typographical error, and to recite a degree of saponification attained in the secondary saponification reaction of the second stage as 99.6

mole% or more, as supported in the specification at page 12, line 17, and the concentration of the polyvinyl alcohol polymer in the saponification reaction solution as 10 wt% or more.

No new matter has been added by the above amendment. Claims 55-58 and 60 are now pending in the application.

ELECTION

Applicants affirm election of a mixture of methanol and dimethyl sulfoxide as the alcohol containing solvent in both the first and second stage process.

REMARKS

The rejections under 35 U.S.C. § 103(a) of:

- (1) Claims 33-37 as unpatentable over
 - (A) JP 03-0430807 (JP '807) or U.S. 5,710,211 (Sato et al), each in view of *Organic Chemistry*, pages 682-83 (Morrison et al) U.S. 5,352,750 (Yanai et al), and U.S. 4,110,494 (Schindler et al); or
 - (B) U.S. 3,080,350 (Imai et al) in view of Morrison et al, Yanai et al, and Schindler et al, optionally in view of Examiner's Notice; and
- (2) Claims 33-37, 45, and 55-60 as unpatentable over the above combination of prior art in (1)(A) or (1)(B), and further in view of the Kirk-Othmer excerpt on evaporation (Standiford), U.S. 5,418,269 (Ishiwa et al), and U.S. 3,684,768 (King et al), are all respectfully traversed.

Rejection (1) is now moot in view of the above-discussed amendment.

The present invention concerns a polyvinyl alcohol polymer (PVA) production method. To be more specific, this invention concerns, along with PVA, a method of